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E-Governance on Ontario Municipal Websites: Exploring the Development of E-Governance Tools Used by Ontario Municipal Planning Departments

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Abstract: This research project sets out to determine whether there are patterns to the adoption of e-governance tools on Ontario municipal websites. Although several potential patterns were examined, there is a specific focus on whether the adoption follows a hierarchical pattern based on intended engagement outcomes. The Planning Department sections of 160 websites for cities with populations between 10,000 and 500,000 citizens were searched for a list of 15 online tools that were selected following a literature review into various uses of online tools. The results demonstrate a number of statistically significant relationships suggesting that there is indeed a hierarchical pattern to tool adoption. In addition, the results suggest a relationship between the number of online tools present and population. It is inconclusive whether there is a relationship between the number of tools used and whether a municipality is reviewing an Official Plan. This research project concludes by outlining a number of opportunities for further research into e-governance tool use and development.

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Chapter 1: Introduction

The use of websites to deliver municipal services and facilitate governance is increasingly recognised in both academic and professional circles as a valuable practice. Over the past several years, academic and professional literature has examined the use of e-governance tools in some of the largest and most prominent municipalities in North America in an attempt to identify trends in the development and implementation of these tools. However, much less research has been done into e-governance in small and medium-sized municipalities. This research project is designed to expand current knowledge of e-governance as it occurs in large cities and apply it to medium-sized municipalities. In pursuit of this goal, research methodology is developed to address the question: "Is there a hierarchical relationship between stages of e-governance tool usage in Ontario municipalities?"

This project compiles existing e-governance literature into a working definition of e-governance and develops a set of representative measurements designed to identify and evaluate different stages of e-governance tool development. The project identifies four hypotheses designed to evaluate how and when different stages of e-governance tools are implemented. The results of this study suggest that pre-existing tools, population, and Official Plan Review status are all either directly linked to the development and implementation of e-governance tools in some way, or are indicative of other factors that could influence adoption of different tools. Following a statistical analysis, some anecdotal evidence is provided as further support and further research topics are identified.

Chapter 2: Literature Review

2.1 Defining e-Governance: Bannister and Connolly (2010)

In their 2010 article discussing the difference between e-governance and e-government, Frank Bannister and Regina Connolly suggest that the plethora of definitions for 'governance' necessitates that studies "start by stating clearly the definition of governance it prepares to use." (Bannister and Connolly: 2010) They identify two facets of governance that in conjunction provide a full definition. The first facet – structural governance – consists of the formal process, structures, hierarchies, legal documents and stakeholders involved in the process of governing. (Bannister and Connolly: 2010) The bulk of these items are tangible and easy to identify and define in an organisational-wide context. The second facet – normative governance – includes items that are much more difficult to identify in practice. This facet of governance revolves around specific values that structural processes deliver such as "transparency, accountability, integrity, honesty, impartiality, efficiency and so on". (Bannister and Connolly: 2010) Using these two facets, we can define governance as a set of formal processes working to deliver normative values to citizens. In order to build on this definition to explain e-governance, we would adopt the same basic structure of processes delivering values, but would specify that the processes must make use of information and communication technologies (ICTs). Bannister and Connolly take this a step further and suggest that simply using ICTs is not enough to provide e-governance. In order for a process to truly qualify as e-governance, it must additionally either alter existing or create new governance structures in ways that are not possible without ICTs. (Bannister and Connolly: 2010) Considering that the focus of this research project is municipal website tools, a working definition of e-governance which takes into account the intricacies Bannister and Connolly set out is: the use of ICTs on municipal websites to alter or create formal processes working to deliver normative values to citizens.

2.2 Citizen Engagement

This research project examines e-governance tools that have the potential to increase citizen engagement opportunities as well as the quality and value of such interactions. Studies into municipal e-governance suggest that many of the engagement tools that municipalities pursue provide only "opportunities for offering input rather than for participating in community problem solving and decision-making". (Moulder and O'Neill: 2009) This is a fine distinction, as in both cases citizens can communicate their values, which theoretically determine the values that governance should pursue. However, offering input simply allows citizens to provide reactionary response to values that staff and politicians have already set while problem solving and decision-making opportunities allow citizens to set values directly. Studies into citizen engagement identify two major schools of democratic theory that provide insight into the value of citizen engagement as a key governance process: deliberative and pluralist democracy.

Deliberative Democracy

Those who view citizen engagement as a type of deliberative democracy see ICT participation tools as an opportunity to facilitate discussion, consensus building and decision making. Within this framework, e-governance serves normative values of increasing equity and democratic discourse, organisational integration and barriers between stakeholders. (D'Agostino: 2011) The caveat to this view is that participation tools must focus on creating opportunities for formative dialogue about service delivery, planning, or other governance structures that allows stakeholders to lead discussion and identify areas of interest rather than traditional tools such as response surveys or leading questions. (Dutil et al: 2007) Building on Bannister and Connolly's framework of structural change with the deliberative model of citizen engagement suggests that e-governance tools change the structure of service delivery in a way that empowers citizens beyond receiving and responding to ICT

service delivery methods. True e-governance tools would proactively seek out the needs and opinions of stakeholders with ICT tools and then design new service delivery methods in collaboration with the stakeholders.

It is important to keep in mind that although deliberative democracy theories include service delivery, the scope of such arguments do expand to include a more fundamental focus on democratic values. While discussion focusses on the 'what' and 'how' of service delivery, the critical element for deliberative democracy is that discussions allow citizens – both directly and indirectly affected by a policy – to interact with service providers in a two-way dialogue relationship rather than a customer or client relationship. (Dutil et al: 2007) Further, it is very important when translating such theory into practice to keep in mind that governance models that are intended to empower citizens – and e-governance models in particular – often result in higher demands for service users who do not have the skills to interact with ICT systems and could potentially work contrary to the intended effect. (Dutil et al: 2007) This being said, a municipality pursuing e-governance options may want to pursue tools that augment or alter existing engagement structures but do not replace them entirely.

Pluralist Theory

There is less discussion about e-governance tools from a pluralist perspective; however it remains a frequently recurring discussion in e-governance literature. The basis of the pluralist argument is that "the availability of information will force political elites to bow to the pressure of *potential* citizen awareness". (Scott: 2006) Pluralist theory points out the fact that public servants who operate government web sites are often more willing to adopt e-governance techniques than politicians who frequently lag behind or openly oppose interactive ICT tools. (Dutil et al: 2007) Unlike deliberative theory which suggests that e-governance provides opportunities for citizens to engage in democratic dialogue around

policy, pluralist theory advocates e-governance as an opportunity to ease barriers to communication between citizens and administration. In turn, this lowering of barriers allows better response to demands making governments more effective and encouraging higher levels of citizen interest and involvement. (Scott: 2006) It is clear why pluralist theory is common in e-governance discourse considering the fact that e-governance provides a number of new avenues for dialogue between citizens, citizen groups, politicians and public servants. ICTs provide opportunities to remove barriers to participation and to increase the flow of information to citizens. One theory called 'hyperpluralism' argues that ICTs also reduce the cost of information sharing and are able to facilitate the growth of informed interest groups. (Scott: 2006) This being said, as much as pluralist theory suggests that e-governance tools allow citizens to access information and organise themselves more easily, it is also the case that governments are able to use the same tools to educate citizens on current issues and to gauge public opinion on policy areas.

e-Governance Goals

Both deliberative and pluralist theories point out that e-governance can serve a variety of end goals. Regardless of overarching theory, e-governance activities take a wide range of forms each intended to meet a different goal. For example, Saxena suggests that e-governance tools ultimately serve either techno-centric or governance-centric goals. Techno-centric goals focus on improving efficiencies simply by using available technologies to perform work and carry out transactions, whereas governance-centric goals focus on improving both the efficiency and the effectiveness of governance processes. (Saxena: 2005) In simpler terms, while techno-centric activities focus on tangible and measurable outputs, governance-centric activities focus on general outcomes. (Saxena: 2005) If we translate this theory to citizen engagement applications then we can see that e-governance tools serve different purposes that are equally legitimate and beneficial. Each of the goals

provides a different type of value to the city and to citizens. For example, using techno-centric ICTs to automate reception of feedback or complaint forms to ensure that they are directed to the appropriate person, or to provide online access to application forms increases efficiencies by reducing processing times and providing citizens with 24 hour access to services. This has great value to citizens and the city because it provides citizens with the opportunity to engage with the city at their own pace, increases perception of city services as user friendly, and reduces the amount of staff time and resources spent dealing with processes that could be automated. Alternatively, using governance-centric ICTs which allow citizens to participate in reviews and planning increases the number of perspectives, allows for a more comprehensive understanding of citizen desires and ultimately, through these outcomes allows for a more thorough and robust planning and governance process. In both scenarios the goal and form of the results is very different, however both are politically legitimate ways to improve service to citizens and provide considerable returns and value to the municipality.

2.3 Stages of e-Governance Tools

One of the more common arguments outlining why governments adopt e-governance tools suggests that service transformations that engage citizens present those affected by the service delivery with more opportunities to engage with providers. (Dutil et al: 2007) This increased level of engagement allows easier access to services, allows providers to adjust systems to work more effectively and efficiently for service recipients, and creates opportunities for collaborative decision making and problem solving. Writers organise the numerous tools available for e-governance interaction categories based on intended goals. For example, Scott provides a four-stage model: "1. No communication or service[;] 2. One-way flow of information from the public site[;] 3. Two-way interaction[;] 4. Full-service transaction". (Scott: 2006) This hierarchy begins at a pre-e-governance stage

and moves in a hierarchic manner through informative and interactive e-governance tools eventually resulting in online tools with full service delivery. This model is useful for establishing the use of ICTs within a hierarchical framework in which municipal administrators incorporate tools for simpler levels such as simple information provision before attempting more complex tools allowing full service provision. This is logical because civil servants need to master the use of e-governance tools in order to use them effectively. For example, if municipal staff are unable to manage and respond to basic inquiries submitted through an online form then they are unlikely to be able to manage more complex tools such as online surveys. A hierarchy allows for development of e-governance tools along with staff mastery of the tools.

West also suggests a four category hierarchy including: "(1) the bill board stage; (2) the partial-service-delivery stage; (3) the portal stage, with fully executable and integrated service delivery; and (4) interactive democracy with public outreach and accountability enhancing factors." (West: 2004) Like Scott, West explores information and service provision tools although West divides services provision into partial and full delivery stages. Unlike Scott, West's hierarchy includes citizen engagement tools and elements of both deliberative and pluralist theory can be seen. Moon describes a similar hierarchy although one with five categories: "(1) simple information dissemination (one-way communication); (2) two-way communication (request and response); (3) service and financial transactions; (4) integration (horizontal and vertical integration); (5) political participation". (Moon: 2002) These categories are more complex and describe tools managing the flow of information between direct stakeholders and government in the early stages and the connection of these groups in the later stages. Both West and Moon's hierarchies are useful because they suggest that the development of e-governance tools expands beyond service delivery to include formal governance processes that allow citizens to engage with and steer political

discourse. In turn, citizens are able to set priorities, participate in decision-making activities and interact with a broader range of stakeholders with the use of online tools.

This research project adapts the three hierarchies above into a four category system including: 1) the Information Dissemination State; 2) the One-Way Service Provision Stage; 3) the Two-Way Service Provision/Communication Stage; and 4) the Citizen Steered Deliberation stage. A general description of each stage follows below.

Information Dissemination

West's categorisation of a 'bill board' explains the Information Dissemination stage very accurately. This stage is the most rudimentary e-governance stage and revolves around providing information from the municipality to citizens with no interactive features. Tools in this stage include but are not limited to providing contact information for staff and Council, meeting minutes and agendas, online newsletters or brochures and pamphlets. This most basic stage usually exists simply by having a municipal website and ICTs are rudimentary, possibly even simply taking the form of text. Note that this stage does not include anything directed towards actual provision of municipal services, simply information. The effectiveness of this stage in terms of actual governance is incredibly limited given the fact that any actual interaction require follow-up on the part of the citizen outside the scope of online tools. Further, citizens must have access to a computer, know where to find the local website and where on the website to check for opportunities. (Moulder and O'Neill: 2009) It is also important to note that websites at this stage are often rudimentary in terms of navigational structure and layout and as such it can on occasion be difficult to locate information on the website. The usefulness of websites at this stage is therefore intrinsically linked to their ability to provide information in an intuitive manner.

One-Way Service Provision

As the name suggests, the One-Way Service Provision stage moves towards using online tools to provide municipal services to citizens. This could include forms, payment services, or tools designed to provide access to municipal services and information in an electronic manner. However, as Bannister and Connolly point out, from an e-governance perspective there is no change to the actual process; the same documentation for services is required, but these forms are available electronically. Further, there are no new services and due to the one-way nature of the service-provision, the government retains full control over how the services are delivered. (Bannister and Connolly: 2010) Strictly speaking, these tools are 'e-government' because they are purely administrative. There is still no citizen engagement or deliberation taking place in this stage. Moving to the One-Way Service Provision stage allows staff to learn how the tools work and explore new methods of service delivery leading to increasing efficiency over time. (Evans and Yen: 2005). Nevertheless, the stage is an important step towards the development of e-governance tools because one-way service delivery "helps the citizen understand some of the advantages of e-government and wins their support in a non-threatening manner." (Evans and Yen: 2005) Because no interaction is required from citizens in order to receive services they are free to explore online tools and service options at their own speed and within their own comfort level. This allows less computer savvy citizens to familiarise themselves with new tools without feeling that the tools are necessary to receive services.

Two-Way Service Provision/Communication

The Two-Way Service Provision/Communication stage provides both services and flow of information much like a combination of the previous two stages. The difference is that this stage includes tools that are specifically designed to allow citizens to decide how to interact with municipal staff and in some cases to provide feedback as part of governance

processes or to request information or services that is not otherwise available online. This being said, as a two-way stage, staff members still have control over the processing of, and responses to feedback and in many cases have complete control over use of the tools. For example, an online survey asking citizens to provide feedback by ranking services or satisfaction allows citizens to provide information to the city that can be used in a governance process; however, staff ultimately control the questions that appear on the survey as well as the form in which answers are provided (numerical, short answer, etc.). Open comment or request forms are common e-governance tools and differ from e-mail because forms "allow site administrators to automatically collect all entries in databases, send automated receipts, analyse the range of comments received and route each comment to the appropriate government department." (Scott: 2006) This stage provides solid examples of e-governance because the use of online tools modifies governance processes in ways that are not possible without ICTs. However, as e-governance tools and applications become more sophisticated they may alienate or prove difficult to access for some citizens. D'Agostino notes that "The internet as a communication medium tends to favour individuals with good writing skills, and these individuals also tend to have greater access to financial resources and education." (D'Agostino: 2011) Following this logic, citizens who are unfamiliar with governance processes and service delivery may find themselves at a disadvantage when using online tools that are poorly designed. The onus falls upon municipalities to ensure that the use and design of tools is accessible to most citizens.

Citizen Steered Deliberation Stage

This is the final and least common stage of e-governance. The Citizen Steered Deliberation Stage gives agenda-setting and decision-making powers directly to citizens with the goal of empowering them to act as leaders in governance processes rather than simply providing feedback. Tools in this stage allow citizens and citizen groups to connect with

each other and have political discussions without the need for participants to occupy a shared physical space and in some cases eliminate the need to participate at the same time. (D'Agostino: 2011) For example, providing a discussion board with social media access where citizens can discuss priorities during an official plan review allows citizens to provide feedback to the process without limitations imposed by city staff (such as selecting survey response options or questions) and this feedback can be used to inform the governance process. Citizens are able to participate as long as they have access to smartphone or a personal or public computer and therefore do not encounter traditional citizen engagement restrictions such as inability to attend public meetings due to time or geographic constraints. Because of the citizen-centric nature of this stage, the progress of developing appropriate online tools is linked with the confidence of citizens in the security and level of privacy of information they are providing. (Evans and Yen: 2005) Concerns about security and privacy may explain the limited use of tools in this stage I by municipalities.

2.4 Conclusions on e-Governance Hierarchy

D'Agostino argues that if we assume a step-based hierarchy of e-governance tool adoption then we are also making an assumption that "the administrative efficiencies associated with processing transactions online are a precursor to the democratic participation needed for the final step". (D'Agostino: 2011) He argues further that this suggests that administration of government – as a precursor stage – is more important than democratic management – the final stage. (D'Agostino: 2011) From this perspective, it stands to reason that administrative processes such as Official Plan Amendments, mandatory citizen engagement and notifications as well as information requests will take priority within Planning Departments during development and implementation of online tools. Citizen-steered deliberation is unlikely to be a major priority for Planning Departments and Two-Way Communication should only be a priority once administrative

needs are met. This is logical given that both the pluralist and deliberative schools of thought suggest that online tools should eventually expand beyond mere service delivery and response and ought to eventually operate in a way that empowers citizens. This being said, some theorists suggest that larger municipalities with more stakeholders may be more conscious of and sensitive to external pressures and therefor more receptive to pursuing development of tools designed to engage citizens. (Moon: 2002) The majority of cases however, should follow a hierarchical development pattern with very few exceptions.

2.5 e-Governance Tools in Practice

Moulder and O'Neill argue that communities need to "create opportunities for [engagement] to happen" and suggest that strategic planning is when these opportunities arise. (Moulder and O'Neill: 2009) The two most common municipal examples of strategic planning are official Strategic Plans and municipal Official Plans. Although some municipalities in Ontario do not have Strategic Plans, the Official Plan is required by legislation to undergo review every five years and must include public consultation. Most municipalities have a Planning or Building division that administers the Official Plan review as well as numerous processes for amending, working with or creating policy based on the Official Plan. Further, unlike other departments which receive funding or oversight from federal or provincial bodies, planning is a predominantly municipally managed area. For these reasons, this research project focusses on e-governance tools as they appear within municipal planning departments.

Chapter 3: Research Question and Hypotheses

3.1 Research Question

This research project sets out to answer the question "Is there a hierarchical relationship between stages of e-governance tool usage in Ontario municipalities?" Although there is research suggesting a hierarchy in theory, there are limited resources showing recent, real-world data within a Canadian context which supports this theory. Further, the research that does exist frequently examines either foreign cities or only large cities across the country. There is very little in-depth research into medium-sized or rural municipalities examining e-governance tool development patterns. Because of this, many of the arguments presented about e-governance in municipalities are either generalisations arising from broad samples that do not take into account the variation in municipal-provincial relationships across the country that inevitably influence administrative practices and are limited in their application to medium-sized or rural municipalities because they focus on large urban centres. This research is intended to provide an in-depth evaluation and general analysis of a broader subset of municipalities within the specific framework of the Ontario municipal relationship. The various hypotheses are either original or arrived at after completing the literature review and discussion with peers. Justification for each hypothesis is included below.

3.2 List of Hypotheses

Hypothesis 1: e-Governance tool development will follow a hierarchical pattern in a multi-stage process as outlined in the literature review. This pattern is identified throughout academic literature as being present in large municipalities and it is likely that medium-sized and small

municipalities will also follow this pattern although they may be at an earlier stage.

Hypothesis 2: Most municipalities will have only One-Way Service Provision and Two-Way Service Provision/Communication tools but will not provide citizen steered deliberation e-governance tools. Because of the cost and staff requirements of managing online tools and processing citizen input, many municipalities will not pursue higher-level tools. Lack of experience or familiarity with online tools on the part of both citizens and staff is likely to increase reluctance to provide tools.

Hypothesis 3: Larger municipalities are likely to be at advanced stages of e-governance tool development while smaller municipalities are likely to be at less advanced stages. As a result of access to larger financial and staff resources combined with public pressures to make governance processes more efficient and accessible, larger municipalities are more likely to view e-governance tools as a valuable investment. Further, they are better equipped to pursue advanced development.

Hypothesis 4: Municipalities currently performing an Official Plan review will provide more advanced e-governance tools. Because these tools allow more widespread consultation with citizens, departments managing an Official Plan review will see value in providing them to citizens thus resulting in faster development of tools designed for a specific process.

Chapter 4: Methodology

4.1 Introduction to Methodology

In order to test the various hypotheses, an index of e-Governance tools was created and divided into categories based on stages of tool development identified during the literature review. A sample of Ontario municipalities was selected in order to include a broad scope of municipal sizes and government types. This included an initial sample in order to test the index as well as determine how many municipalities could be included within the time constraints of the project. This section explains how the index items were compiled, how the cases were selected, and how each item was measured.

4.2 Case Selection

This survey is limited to the 444 municipalities that the Ontario Ministry of Municipal Affairs and Housing identifies on their website (Ministry of Municipal Affairs and Housing: 2013) In order to ensure that the sample provides a broad representation of Ontario municipalities while ensuring that individual cases are comparable, all municipalities with a population below 10,000 or above 500,000 citizens as reported by the 2011 Census of Canada were eliminated from the study. Previous Western University MPA student Jordan Dolson notes that the financial constraints on small municipalities limit the development of e-Governance tools available on their websites. (Dolson, 2010) A research project similar to this one would need to be performed for the under 10,000 category and could adapt measurement criteria to reflect either the financial restrictions or provide a different set of tools for measurement. There is existing research into e-governance tools available for municipalities over 500,000 citizens. The decision to limit the study was two-fold; firstly, the limit prevents attempts to compare development of e-Governance tools in municipalities that operate very different from one another due to financial circumstances; secondly, to

reduce the size of the study for time considerations while retaining a reasonably representative sample size from which generalisations can be drawn.

It should be noted that Statistics Canada does not include a number of upper-tier municipalities in the same category as single and lower-tier municipalities. Statistics Canada defines municipalities as "Census Subdivisions" and the vast majority of cases fall into this category. A handful of upper-tier municipalities are considered "Census Divisions" and are not included in the Census listing of municipal populations. Statistics Canada maintains separate data sets for each of these categories and so it was necessary to combine the population figures from these lists meaning that the populations of lower-tier municipalities included in the list of cases are included twice because they are also included in the populations of their respective upper-tier municipalities. This does not compromise the data set created during this research project or the conclusions thereof because the population of each municipality is simply intended as a general measurement of the tax and resources base of a given municipality and not as a portion of total population.

Ultimately there are a total of 159 eligible cases in the study representing 35% of all Ontario municipalities. Excluding any municipalities listed as Census Divisions rather than Municipalities by Statistics Canada, the sample range accounts for 50.64% of the population of Ontario. The complete list of municipalities included appears in Appendix A and is arranged in order of descending population.

An initial random sample of 10 municipalities was performed in order to determine the amount of time required to test each case as well and to identify any alterations to the list of items to be measured (see section 4.3). Every 16^{th} municipality on an alphabetical list

of 160 cases[1] was selected for this initial sample. The list of municipalities included in the initial sample appears in Table 4.2 and shows their geographic location. Following this initial sample, some of the measurement criteria was adjusted – adjustments are detailed in later sections – and these sites re-evaluated with the new criteria.

Table 4.1 – Municipalities Included in Initial Sample

	Municipality	Population
1.	Caledon, Town of	59,460
2.	Erin, Town of	10,770
3.	Haliburton, County of	17,026
4.	Lakeshore, Town of	34,546
5.	Mississippi Mills, Town of	12,385
6.	Orangeville, Town of	27,975
7.	Prescott and Russell, United Counties of	85,381
8.	South Stormont, Township of	12,617
9.	Tiny, Township of	11,232
10.	Windsor, City of	210,891

4.3 Sections of Websites Examined

As outlined briefly in the literature review, this research project focusses on e-governance tools used specifically by municipal planning departments. Because of this narrow focus, the examination of websites took place primarily on the section of each website designated for the Planning Department. There are a number of benefits and to this approach. For example, planning departments perform a diverse cross-section of activities that occur throughout municipal governments. By focussing on planning departments, the study is able to capture activities such as basic inquiry responses, financial and administrative transactions, citizen engagement, direct provision of services to citizens, and city-wide governance activities affecting all citizens whether or not they choose to participate in a process. Further, planning is a function that municipalities of all types and sizes are responsible for to some degree which makes a focus on planning an excellent way

[1] Authors Note: The 160 case list includes The Regional Municipality of Durham which was overlooked for elimination due to having a population of 668,599 citizens. During the creation of the complete data set after completion of the initial sample this discrepancy was identified and the case removed from the study.

to provide meaningful comparison between different cities. Because municipalities have different organisational structures the names of these sections span a wide range of names such as “Planning Department”, “Planning and Development Services”, “Planning and Building” and “Community and Strategic Planning”. To maintain consistency across all cases, whichever department holds primary responsibility for creation and maintenance of the Official Plan and amendments and applications to the Official Plan was used.

It is also important to note that there are some research biases and limitations despite the benefits of narrowing the research to planning departments. For example, although planning departments deal with the general public during review and creation of Official Plans and application reviews, the bulk of their day-to-day operations do not include private citizens. Although some requests and applications may be made by citizens interested in a development near their home or performing renovations, applications for variances and Official Plan amendments are more likely to come from contractors, developers and local business. This means that the ability to generalise results of this survey in the service provision categories is somewhat limited. It is also important to note that because the bulk of citizen engagement tools will be linked to specific projects within a planning department rather than throughout the municipality as a whole, there will be some bias towards municipalities with active development. This is simply because if there are more projects under way, there are more opportunities to provide online tools. Because the same tools will typically be repeated on a website for multiple purposes, it is unlikely that this bias will drastically affect the outcomes of this research. The major exception to this rule is creation and review of the Official Plan which is city wide and open to input from all stakeholders. It important to keep the potential biases in mind as they could result in some skewing of results where smaller municipalities do not provide e-governance tools simply

because there are no active uses for them, but would provide them in different circumstances.

Although this research project focusses on the use of e-Governance tools, it does not focus on website design or accessibility. This being said, if citizens cannot find tools then the tools have little value. Conversely, many municipalities attempt to increase accessibility with different website layouts and navigational hierarchies that result in tools being accessible without having to navigate to the Planning Department section. In order to account for these minor variations between different websites four additional sections of each website were included in the examination if they were available. These include 1) the homepage; 2) the "Contact Us" page; 3) any separate "Online Services" section; and 4) available search bars. The homepage is likely the first place a citizen will visit on a website and therefore it makes sense to include any tools that are accessible from that section. The contact page is a common place for website users to go if they want to bypass navigation of the website and immediately determine how to contact staff and many of these pages include contact forms. Similarly, inclusion of online services sections is reasonable because much like the contact page, an online services page allows citizens to bypass navigation of the website and immediately gain access to e-governance tools. Finally, the search bar allows users to search the entire website for words or phrases. If a tool is difficult to find through manual navigation, citizens may attempt to search for it in order to save time. The search terms used for this research are "Official Plan", "Strategic Plan", "Survey", "Social Media", "RSS", "Facebook", "Twitter", "Permits", "Comment", "Feedback", "Chat", and "Vote".

4.4 Identification of Measurements

The four stages of e-governance tool development are Information Dissemination, One-Way Service Provision, Two-Way Service Provision/Communication and Citizen Steered

Deliberation. At this point in time, simply having a website constitutes completion of the Information Dissemination stage and so this stage was omitted from the research. A set of online tools was selected for each of the remaining three categories. Initially, each tool was selected because it was identified in a number of existing studies during the literature review as a common or representative tool for the development stage. Following completion of the initial sample some changes were made to the list of tools either adding items based on common tools found during the initial sample, or combining redundant categories. Table 4.3 shows a complete listing of the e-Governance tools chosen.

Table 4.2 – e-Governance Tools by Hierarchical Stage

Information Dissemination	One-way service delivery	Two-way communication and Delivery	Citizen steered deliberation
N/A	1. Hard forms online but still filed in person 2. Hard forms online and can submit online 3. Digital forms and submission 4. Searchable database 5. All planning forms, documents, bylaws, and info accessible from Planning Department page	6. Personalised Alerts/RSS Feed 7. Online discussion board 8. Open feedback/request forms for info 9. Surveys 10. Link to social media	11. Open comment/request forms for process 12. Use of social media for process 13. Live chat 14. Online, binding voting (plebiscites) 15. Public meetings /w online access
Max Score: 0	Max Score: 5.0	Max Score: 5.0	Max Score: 5.0

4.5 Explanation of Measurements

e-Governance Tools were selected for the following reasons:

One-way Service Provision

This section focusses on tools designed to deliver planning and development services such as building permits and site plan applications; the ability to search for

information regarding on-going developments or applications; planning and development by-laws; and documents such as Official or Strategic Plans.

1 – 3. Online Forms and Submissions

These categories cover all forms available to citizens for planning purposes. This could be something as simple as a building permit (requiring construction to meet zoning requirements) or something more complex such as a subdivision application form. The second category, "Hard forms online and can submit online" includes both submissions through direct upload, or by email. Providing forms online but requiring physical submissions is still an e-governance tool because it eliminates the need to travel to City Hall to initiate the process, however digital submissions are more advanced allowing submissions without having to leave home.

4. Searchable Database

This is not the same as a website wide search bar. This includes only databases designed to allow users to search a database of planning related items such as available city properties for sale, current development projects, open applications seeking public consultation, or planning related by-laws. The goal of these tools is to allow governments to deliver information about services without having to interact face-to-face with citizens.

5. All planning forms, documents, bylaws and info accessible from Planning Department page

The category "All planning forms, documents, bylaws and info accessible from Planning Department page" was added after the initial survey to account for the fact that some websites divide their sites by department making it easy to locate these documents, while other divide sites based on user type (such as resident or business users) or by service (such as "Build", "Work", "Play") and although all tools may be present, users may have to visit a Planning Services section under each user type in order to access all of the tools. For example, 'Resident Services' may provide access to zoning amendment and building forms, but users have to go to 'Commercial Services' to gain access to a subdivision application form.

Two-way Service Provision and Delivery

This section focusses on tools that provide citizens with the ability to request specific information or services from staff rather than simply operating within the confines of what is made available online. This includes the ability to request updates or information that are not made available elsewhere on the website, the ability to send solicited or unsolicited feedback to staff – such as consultation on developments and Official or Strategic Plan proposals – as well as general inquiries, comments or complaints. The tools may be geared towards services for which online delivery already exists, but should also allow citizens to request services that are not available online so they can be directed to appropriate resources. This section also includes the provision of tools that allow discussion between citizens but are not explicitly used in pursuit of a governance process.

6. Personalised Alerts/RSS Feeds

Examples of personalised alerts include allowing citizens to sign up for RSS feeds from the municipality, a local newsletter, a mailing list, or any other service that allows users to determine what sorts of information they

desire. This could mean signing up for updates on an Official Planning process but choosing to not receive road work updates. Originally RSS feeds were not included in this category but were added after the initial sample.

8. Open Feedback/Request Forms

Originally this category included only forms designed to direct comments and requests through a comment re-direction system. This was expanded after the initial sample to include forms that redirect comments through a municipal email system. This differs from simply providing email addresses because the use of actual forms allows the ICT system to prioritise based on urgency and topic then relay information directly to the appropriate staff member rather than leaving citizens to simply select an email address from a staff directory.

9. Surveys

This category includes any polls or surveys that are not binding on staff to act upon the results of, but do attempt to gauge public opinion on a specific matter. This allows staff to determine questions and potential answers leaving citizens to provide only pre-set responses.

11. Link to Social Media

This category was originally separated as “Link to Twitter” and “Link to Facebook”. However, after the initial sample these categories were combined to include any of the other social media sites that many municipalities use such as YouTube, MySpace and Google+. The use of

social media applications allows citizens and staff to communicate and although open for multiple uses is not directed at any specific governance process.

Citizen Steered Deliberation

This final section focusses on tools that provide citizens with the ability to connect with one another for structured discussions surrounding governance processes and for citizens to provide deliberation and guidance to staff and politicians on municipal affairs. This differs from the Two-Way Service Provision/Communication stage because these tools deal with governance processes and are designed so that the process is altered to incorporate the ideas and decisions that citizens make using ICTs. One example might include the use of comment forms used to solicit feedback on specific projects or reviews rather than simply leaving open forms for any topic. These tools are primarily used for discussion and deliberation, however they could also be used to direct resources to developing additional e-services based on citizen requests. Ultimately the distinguishing factor of the tools in this category is that they allow citizens to create and lead discussion and put staff and politicians in a position in which there is either pressure to act on citizen feedback gained through the tools, or in some cases, under an obligation to act.

11. Open comment/request forms for process

These can be forms that operate in a similar way to the open forms from the previous stage (tool #8) but that are used specifically to solicit feedback as part of an administrative or governance process. For example, rather than simply having a form available for citizens to submit general comments to a Planning Department, this would require comments to be in response to a specific process such as asking for feedback or citizen priorities for a proposed subdivision. It could also be used for a larger review process such

as allowing citizens to provide feedback or set priorities for an Official Plan Review.

12. Use of Social Media for Process

Again, this is similar to the social media links in the previous category but is directed specifically towards use on a specific project or process. For example, rather than simply providing a link to a municipal Twitter account, usage of social media in this category would include asking citizens to tweet their top priority for an Official Plan using a designated hashtag (eg. #officialplanreview). For a more open deliberative purpose, examples include providing a discussion topic on a municipal Facebook page allowing citizens to discuss proposed developments with other citizens rather than simply forwarding comments to staff. Staff would then follow up on both of these examples and incorporate feedback into the planning process.

13. Live Chat

This e-Governance tool allows citizens to enter into a real-time, online chat with other citizens, staff and/or politicians to discuss and deliberate on current issues.

14. Online, binding voting (plebiscites)

A seldom used tool, but still one that very strongly satisfies the requirements for a deliberative e-governance tool, this would include any online poll or survey, the results of which bind staff to act on.

15. Public Meetings with online access

This e-Governance tool would likely take the form of webinars or live-stream technology with a chat or other real-time communication option. An example would be allowing citizens to gain online access to an audio-video stream of a public engagement session and allow connected citizens to provide feedback directly to staff at the meeting. A tool such as this allows augmentation of traditional governance processes by expanding the audience and number of participants through ICTs and without requiring additional meeting times or spaces.

4.6 Measurement Process

To measure the number of e-governance tools for each case, every municipal website was visited during the span of a week. The homepage and contact page were visited first and any tools located on either of these pages recorded. Next, the Planning Department page was located and any sub-pages or links within the navigational hierarchy for Planning were evaluated. In some cases, e-governance tools for Official Plan reviews were hosted on separate websites (for example the City of London hosts their review process at rethinklondon.ca). In these cases, so long as the links to these pages were made available from the Planning Department and explicitly described as being a part of the planning process they were included. Finally, searches were done using website search bars for any items that had not yet been located. Each time a listed tool was present a score of 1.0 was added to the appropriate category while listed tools that were not present received a score of 0. Each category has a maximum score of 5.0 and accordingly, each municipality has a maximum total score of 15.0.

Following a presentation of this study to peers in the Local Governance Program at Western University a suggestion was made to compare the measurements of e-governance

tool usage to Official Plan Review status. The argument presented is that municipalities currently undergoing an Official Plan Review may be more likely to pursue development of e-governance tools or even bypass stages in the development. This was added as a hypothesis and a follow-up data collection period occurred noting whether each municipality is undergoing an Official Plan Review. Municipalities that state on their website that a review is currently underway were recorded as “Yes”, while all others were recorded as “No”.

Chapter 5: Analysis of Evaluation

5.1 Introduction to Analysis

The analysis of the data collected shows descriptive statistics, calculations for Pearson Correlation Coefficients and regression analysis. All statistics were computed with SPSS.

5.2 Descriptive Statistics

Summary Statistics

Table 5.1 shows descriptive statistics for each of the e-governance tool sub-index categories as well as the total index score. As outlined in Chapter 4 of this paper the maximum total score for each sub-index category is 5.0 while the maximum total range is 15.0. Both the One Way and Two Way categories included cases spanning the entire range of possible scores (0.0 to 5.0), however of the three sub-index categories two-way delivery has the largest variation with a standard deviation of 1.23. The incredibly low occurrence of Citizen Led Deliberation tools is demonstrated by the low range of scores (0.0 to 2.0) and the low standard deviation of 0.49. The mean score decreases from each sub-index to the next which – in addition to further statistical analysis – supports the hypothesis that Ontario municipalities follow a hierarchical development of e-governance tools in which lower level tools (One-Way Provision) are developed in significant numbers before moving on to higher level tools (Two-Way Provision/Communication and Citizen Steered Deliberation).

The Total Score statistics are of particular interest for a number of reasons. Chiefly, no municipality received a perfect score and in fact, the highest score received was 10.0 which is only two-thirds of the total possible score. The two municipalities that received this score are the City of London and the City of Burlington both of which are currently undergoing a major Official Plan Review and both of which received the majority of points as

a direct result of tools directed towards the review process. Another point of interest is the fact that although total scores range as high as 10.0, the median score of 4.0 and the mean score of 4.59 are both fairly low suggesting that the average Ontario municipal planning department does not employ a particularly high number of e-governance tools. This being said, the Total Score category also has the highest variation with a standard deviation of 2.00.

Table 5.1 - Descriptive Statistics for e-Governance Tool Categories

		One Way Delivery	Two Way Delivery	Citizen Led Deliberation	Total Score
N	Valid	159	159	159	159
	Missing	0	0	0	0
Mean		2.4340	1.9057	.2453	4.5849
Median		2.0000	2.0000	.0000	4.0000
Std. Deviation		.92455	1.22626	.48675	2.00412
Range		5.00	5.00	2.00	10.00
Minimum		.00	.00	.00	.00
Maximum		5.00	5.00	2.00	10.00

Frequency Distribution Tables

Tables 5.2 through 5.4 show a breakdown of the distribution of scores within each sub-index as well as the total index score. Table 5.2 shows that only about 10% of municipalities have fewer than 2.00 One-Way Service Provision tools available for citizens while the vast majority (79.9%) have either 2.0 or 3.0 tools. Table 5.3 shows that although the quantity of municipalities that offer zero or only one tool increases to 40% in the Two Way Service Provision/Communication stage, the majority of cases fall into the 2.0 or 3.0 range. This may suggest that regardless of any hierarchical development pattern municipalities generally pursue a limited number of tools rather than attempting to provide as many as possible. Table 5.4 shows just how few municipalities have begun to pursue Citizen-Steered Deliberation tools. Only 35 of the 159 cases had any tools at all and only

four municipalities have more than one. The most common tools appearing in these cases was the provision of feedback forms directed to either an Official Plan Review or soliciting feedback on a development application or other planning proposal. A full detailed breakdown of the survey results appears in Appendix B.

Table 5.2 - Frequency Distribution for One Way Service Provision

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	5	3.1	3.1	3.1
	1.00	11	6.9	6.9	10.1
	2.00	72	45.3	45.3	55.3
	3.00	55	34.6	34.6	89.9
	4.00	13	8.2	8.2	98.1
	5.00	3	1.9	1.9	100.0
	Total	159	100.0	100.0	

Table 5.3 – Frequency Distribution for Two Way Service Provision and Communication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	25	15.7	15.7	15.7
	1.00	39	24.5	24.5	40.3
	2.00	33	20.8	20.8	61.0
	3.00	51	32.1	32.1	93.1
	4.00	10	6.3	6.3	99.4
	5.00	1	.6	.6	100.0
	Total	159	100.0	100.0	

Table 5.4 – Frequency Distribution for Citizen-Steered Deliberation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	124	78.0	78.0	78.0
	1.00	31	19.5	19.5	97.5
	2.00	4	2.5	2.5	100.0
	Total	159	100.0	100.0	

Table 5.5 shows the frequency distribution for the Total Index Score. Only three municipalities have a score of 0.0 all three of which are small, lower-tier municipalities: the Township of Hamilton and the Municipality of Lambton Shores which are both among the smallest municipalities included in the survey by population (10,702 and 10,656 respectively) and the Township of St. Clair which has a population of only 14,515. In addition to London and Burlington which both received a high score of 10.0, the next highest with a score of 9.0 were the City of Thunder Bay and the City of Markham both of which are performing an Official Plan Review and the Town of Halton Hills which is not. Of these five cities, only Halton Hills has a population of fewer than 100,000.

Table 5.5 – Frequency Distribution for Total Scores					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	3	1.9	1.9	1.9
	1.00	1	.6	.6	2.5
	2.00	16	10.1	10.1	12.6
	3.00	36	22.6	22.6	35.2
	4.00	27	17.0	17.0	52.2
	5.00	26	16.4	16.4	68.6
	6.00	19	11.9	11.9	80.5
	7.00	19	11.9	11.9	92.5
	8.00	7	4.4	4.4	96.9
	9.00	3	1.9	1.9	98.7
	10.00	2	1.3	1.3	100.0
	Total	159	100.0	100.0	

Table 5.6 simply shows the number of municipalities whose websites indicate that they are currently performing an Official Plan Review. Very few municipalities fall into this category (18.9%).

Table 5.6 – Frequency Distribution for Official Plan Reviews

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	129	81.1	81.1	81.1
	Yes	30	18.9	18.9	100.0
	Total	159	100.0	100.0	

5.3 Correlation Statistics

Table 5.7 shows the Pearson Correlation Coefficient between the three stages of e-governance tool development. The relationship between each stage of development is positive and significant at the 0.01 level with a two-tailed test. This being said, the correlations between One-Way Service tools and Two-Way or Citizen-Steered tools are admittedly fairly small at 2.60 and 2.54 respectively. The correlation between Two-Way and Citizen-Steered tools is considerably higher at 0.506 suggesting a much stronger relationship between these two tools. To some degree the low correlation coefficient may be explained by a handful of issues with the research methodology that are outlined in Chapter 6 and if corrected, will likely result in a much stronger relationship. All considered, the fact of the matter is that regardless of the low coefficient there is still a positive and significant relationship between each stage of e-governance tool development.

Table 5.7 – Correlation Between Stage of e-Governance Tool Development				
		One Way Delivery	Two Way Delivery	Citizen Led Deliberation
One Way Delivery	Pearson Correlation	1	.260**	.254**
	Sig. (2-tailed)		.001	.001
	N	159	159	159
Two Way Delivery	Pearson Correlation	.260**	1	.506**
	Sig. (2-tailed)	.001		.000
	N	159	159	159
Citizen Led Deliberation	Pearson Correlation	.254**	.506**	1
	Sig. (2-tailed)	.001	.000	
	N	159	159	159

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5.8 shows the correlation between the Total Index Score and population levels. This correlation is also significant at the 0.01 level with a two-tailed test. The coefficient of 0.498 is a positive and significant one suggesting that there is a positive relationship between population size and the number of e-governance tools available regardless of specific levels of development.

Table 5.8 – Correlation Between Population and Total Index Score			
		Total Score	Population
Total Score	Pearson Correlation	1	.498**
	Sig. (2-tailed)		.000
	N	159	159
Population	Pearson Correlation	.498**	1
	Sig. (2-tailed)	.000	
	N	159	159

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5.9 shows the correlation between the Total Index Score and whether or not a municipality is performing an Official Plan Review. The coefficient of 0.325 is positive thus suggesting there is a relationship between these two variables. The correlation is significant at the 0.01 level with a two-tailed test.

Table 5.9 – Correlation Between Official Plan Review and Total Index Score			
		total	opr
Total Score	Pearson Correlation	1	.325**
	Sig. (2-tailed)		.000
	N	159	159
Official Plan Review	Pearson Correlation	.325**	1
	Sig. (2-tailed)	.000	
	N	159	159

**. Correlation is significant at the 0.01 level (2-tailed).

5.4 Regression Analysis

Tables 5.10 through 5.20 show regression analyses for the sub-index scores. Tables 5.10 through 5.12 use One-Way Service as the independent variable and Two-Way Service as the dependent variable. The results of the regression analysis further supports the positive relationship outlined by the Pearson Correlation Coefficients. Again, there is a positive relationship, however the relationship is not particularly strong.

Table 5.10 - Model Summary for One-Way Service and Two-Way Service Sub-Index Scores							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.260[a]	.067	.061	1.18797	.067	11.349	1

a. Predictors: (Constant), One Way Delivery

Table 5.11 - ANOVA[a] for One-Way Service and Two-Way Service Sub-Index Scores						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.016	1	16.016	11.349	.001[b]
	Residual	221.568	157	1.411		
	Total	237.585	158			

a. Dependent Variable: Two Way Delivery

b. Predictors: (Constant), One Way Delivery

Table 5.12 - Coefficients[a] for One-Way Service and Two-Way Service Sub-Index Scores

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.067	.266		4.012	.000
	One Way Delivery	.344	.102	.260	3.369	.001

a. Dependent Variable: Two Way Delivery

Tables 5.13 through 5.15 use Two-Way Service as the independent variable and Citizen-Steered Deliberation as the dependent variable. The results show a positive relationship between the Two-Way and Citizen-Steered categories that is much stronger than between One-Way and Two-Way.

Table 5.13 - Model Summary for Two-Way Service and Citizen-Steered Deliberation Sub-Index Scores

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.506[a]	.256	.251	.42129	.256	53.910	1

a. Predictors: (Constant), Two Way Delivery

Table 5.14 - ANOVA[a] for Two-Way Service and Citizen-Steered Deliberation Sub-Index Scores

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.568	1	9.568	53.910	.000[b]
	Residual	27.866	157	.177		
	Total	37.434	158			

a. Dependent Variable: Citizen Led

b. Predictors: (Constant), Two Way Delivery

Table 5.15 - Coefficients[a] for Two-Way Service and Citizen-Steered Deliberation Sub-Index Scores						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.137	.062		-2.216	.028
	Two Way Delivery	.201	.027	.506	7.342	.000

a. Dependent Variable: Citizen Steered

Tables 5.16 through 5.18 show a regression analysis for the Total Index Score as the dependent variable and population as the independent variable. Once again, the analysis suggests a positive relationship between the two variables.

Table 5.16 - Model Summary for Total Score and Population							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.498[a]	.248	.243	1.74397	.248	51.654	1

a. Predictors: (Constant), Population

Table 5.17 - ANOVA[a] for Total Score and Population						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	157.101	1	157.101	51.654	.000[b]
	Residual	477.503	157	3.041		
	Total	634.604	158			

a. Dependent Variable: Total Score

b. Predictors: (Constant), Population

Table 5.18 - Coefficients[a] for Total Score and Population						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.818	.175		21.854	.000
	Population	1.245E-005	.000	.498	7.187	.000

a. Dependent Variable: Total Score

Tables 5.19 through 5.21 show a regression analysis with Total Score as the dependent variable and whether or not a municipality is performing an Official Plan Review as the independent variable. There is a very small, but still positive relationship evident between these two variables.

Table 5.19 - Model Summary for Total Score and Official Plan Review				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.325[a]	.106	.100	1.90101

a. Predictors: (Constant), Official Plan Review

Table 5.20 - ANOVA[a] for Total Score and Official Plan Review						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	67.233	1	67.233	18.604	.000[b]
	Residual	567.371	157	3.614		
	Total	634.604	158			

a. Dependent Variable: total

b. Predictors: (Constant), Official Plan Review

Table 5.21 - Coefficients[a] for Total Score and Official Plan Review						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.271	.167		25.520	.000

Chapter 6: Comments and Conclusions

6.1 Introduction to Conclusions

This conclusion section returns to each of the five hypotheses and explains how each hypothesis is either supported or rejected by the statistical analysis. Further, where appropriate, a number of qualitative anecdotes observed during research but not formally part of the study appear here. These conclusions also identify where further research could either strengthen support of the hypotheses, or generally expand on e-governance literature. Finally this section outlines some of the limitations of this study.

6.2 Hypothesis 1

Hypothesis: e-Governance tool development will follow a hierarchical pattern.

The descriptive statistics, correlation and regression analyses all suggest that to some degree there is a relationship between successive stages of e-governance tools. As such, the results support this hypothesis. The correlation and regression analyses suggest that there is a much stronger relationship between developments at the higher levels of the hierarchy. Although the relationship between developments at lower levels is weak, it is still evident. The emergence of social media as an e-governance tool in recent years provides some threat to this hypothesis. Because social media applications are already in use by citizens and the ICT systems are developed by a third-party, the use of social media as an e-governance tool is both inexpensive and likely to receive buy-in from citizens. As such, it is now very easy to bypass development of one-way service provision tools and instead move directly to social media use as a two-way service delivery application. This phenomenon did occur in a small

number of cases. Further analysis into the Two-Way Service Delivery sub-index examining the occurrence of social media use versus other tools, or simply into the use of social media applications by municipalities would be valuable for understanding how and why decisions to adopt social media policies and practices are made.

In addition, examination of the data collected shows that there are some municipalities who have few one-way tools yet still have a significant number of two-way tools. Although there could be many explanations for this phenomenon, a likely reason relates to the research design itself. The tools chosen for measurement were selected largely because the literature review identified them as tools that are commonly used by municipalities but without the distinction of a specific department such as planning. The measurement of online payment services was explicitly omitted from this survey because the most common use for this tool is utility payment, tax payment, parking ticket payment or by-law violation payment. However, while including one-way services such as the ability to submit planning applications online, it was not taken into account that most applications also require some form of application fee that must be paid in conjunction with submission. Although not recorded in the survey, many of the municipalities that provide tools allowing for online application submission also facilitate online payment of fees at the same time. The decision to not provide online form submission may have nothing to do with the actual form submission tools, and may be a result of discomfort with online payment services. Although it is possible to allow form submission online and require traditional payment of fees through cheque or cash payments, the decision to not provide form online submission tools through the planning

departments may be an explicit decision to reduce the number of applications made without payment, or to maintain a one-step submission process rather than having submission and payment made separately. Further research could be performed into the relationship between online payment services and online application submissions or about planning departments' online application practices.

6.3 Hypothesis 2

Hypothesis: Most municipalities will have only one-way and two-way service provision tools and few if any citizen-steered deliberation tools.

A brief look at the frequency distributions provides a great amount of support for this hypothesis. The fact that only 22% of the municipalities studied have any citizen-steered deliberation tools and that of those cases, on average, municipalities have around 2 tools for the other categories suggests that one-way and two-way tools are the most common. Following the hierarchical development argument, this situation is likely because governments and citizens are not familiar or comfortable enough with the use of these tools. Although the statistics show support for this theory, it is of course only one possible explanation for the lack of uptake of citizen-steered deliberation tools. Further, although this study is designed to use Planning Departments as a representative of their municipalities it is possible that other departments, or entire municipalities will have different usages. However, given that online activities are often managed outside of any one specific department, it is likely that the type of tools used will be consistent across all municipal departments.

6.4 Hypothesis 3

Hypothesis: Larger municipalities are likely to be at more advanced stages of the hierarchy while smaller municipalities are likely to be at less advanced stages.

The analyses demonstrated a positive relationship between population size and the total number of tools suggesting that the development of tools is affected by municipal size. Further, of the 35 municipalities with scores in the highest stage of tool development (citizen-steered deliberation) only 11 (31%) have populations fewer than 50,000. These numbers both statistically and anecdotally support the hypothesis. Much like Hypothesis 1, the selection of measurement tools could affect the outcomes of this research because Planning Department tool usage may differ from broader municipal tool usage and e-governance tools are constantly evolving. For example, the literature supports the inclusion of message boards as a tool, however in practice almost no cases provided a message board on their website. Instead, this function has been almost entirely replaced with social media. Further, as already discussed, social media allows use of e-governance tools that are cost-effective and have citizen support. If we use population as a proxy variable to encompass other variables such as available financial and human resources or public support and demand for e-governance tools, then social media could provide an opportunity for municipalities to speed up adoption of e-governance tools. This is furthered by the fact that social media may allow bypassing of stages meaning that this is an area of e-governance that should be watched closely for new developments. The fact that social media allows rapid development and allows accessibility for municipalities that would otherwise not be able to provide e-governance tools could mean that the hierarchical development process may eventually shift or

even be eliminated. Alternatively, social media tools could evolve to become a separate category of tool development.

Although not included as part of this study, informal notes regarding interesting features or factors related to website tools and development were kept during the research process. Around one-third of the websites examined are designed by one of two companies – icompass and esolutions. In addition to a near identical visual appearance and navigational structure, these websites with very few exceptions had identical scores and identical use of tools. Although unrelated to this specific study, this suggests that although there is a hierarchy for stages of tool development, the speed at which tools are implemented and possibly even the decision to implement certain tools may be a direct result of third-party, non-government web designers. This would be an interesting area for further examination.

6.5 Hypothesis 4

Hypothesis: Municipalities currently performing an Official Plan review will provide more advanced e-governance tools.

The analysis shows some relation between municipalities performing an Official Plan and the number of tools developed. Further, as noted in the statistics analysis, the municipalities with the highest overall scores were undergoing a review. Of the municipalities that received any score in the citizen-steered deliberation category, only 13 were actively undergoing an Official Plan Review. However, only municipalities which were actively performing a review were recorded resulting in a number of municipalities which recently completed a review or a full draft of a new Official Plan not being counted towards this score. This means that any municipalities that

implemented e-governance tools as part of an Official Plan Review but recently ended the review were not counted towards this analysis. If this part of the study was performed again and included municipalities who had completed reviews within the past year the results may show a much stronger relationship. If a strong correlation is to be shown between Official Plan Review status and development of tools, a more accurate study will need to be performed; a survey to Planning Departments directly asking if a review led to the implementation of e-governance tools would be the most effective way to measure this.

6.6 Limitations of this Study

There are some limitations to conclusions drawn from this study. First and foremost, it is important to note that although there are positive and statistically significant relationships between the variables analysed, the relationships are not always strong. This suggests that although the study provides support towards confirmation of the hypotheses – specifically those related to hierarchical relationship – the results are far from definitive. This could be a result of any of the factors listed above such as selection of measurements or measurement criteria, or could suggest that there are other factors not controlled for and affecting the adoption of e-governance tools. This being said, there is still positive support of hierarchical development; simply not as strong a level of support as would be preferred. To address this issue, additional studies could be done using control variables designed to examine specific stages of development or why specific tools are pursued. Another option to help clarify the results of this study would be to look at the online services of the entire municipal administration rather than simply one

department or by adjusting the list of tools selected to account for specific activities within a given department rather than tools that serve as indicators of e-governance status on an organisational level.

The fact that the study indicates a relationship between population and e-governance development means that the ability to generalise the results of this study to municipalities outside the scope of this project (10,000 – 500,000 citizens) is limited due to the financial and administrative differences between municipalities included in the sample and municipalities of considerably larger or smaller sizes. The survey is more generalizable to other provinces with similar sized municipalities than it is to Ontario municipalities as a whole. Further, because population size seems tied to the development and implementation of e-governance tools and the results of this study suggest a relationship between different stages of tool development that is not as strong as those found in studies of large municipalities, it is entirely possible that small municipalities may not conform to a hierarchical development pattern. Because small municipalities have many limitations that medium and large municipalities do not – such as financial restraints and access to high speed internet – additional studies into e-governance in small municipalities would be an interesting topic.

One of the largest limitations of this study is the fact that it only looks at Planning Departments. Although the decision to limit the research to this specific municipal policy area is intended to isolate a policy area in which the day-to-day functions do not frequently experience pressures from other levels of government, it also means that we are generalising the behaviour of one department as being typical of the entire organisation. Although this is likely the case because IT policies and practices are usually applied across the organisation

it does not exclude the possibility that one or more of the planning departments evaluated is a leader or late-adopter within an organisation. In fact, given that there is some evidence suggesting that Official Plan Reviews lead to pursuit of new e-governance tools, it is likely that Planning Departments may be used as testing grounds and be leading their organisations in regards to e-governance. Some additional qualitative research into the cases would explain this relationship.

Finally, although some qualitative analysis is included in this study, the results are primarily quantitative. As a result, any conclusions are general in nature and may not reflect specific situations. Qualitative studies would be valuable to explain abnormal or particularly interesting cases such as the Town of Halton Hills which is both the only top scoring case in this study with a population below 100,000 and the only top scoring case not currently performing an Official Plan review. While this study shows that Ontario municipalities generally follow a hierarchical development pattern for e-governance tools, a more in-depth study into some representative cases could shed light on other factors that may spur on development.

6.7 Conclusion

The body of literature related to e-governance and online tool development is one that is consistently growing and due to the increasingly technology literate population is likely to be a field of great value to municipal governments. This research project has built on existing research into large municipalities by demonstrating that the patterns that occur in online tool development in large municipalities across North America do indeed occur in smaller municipalities though to a smaller degree. Further, population size is

confirmed to have a relationship with the types of tools that are pursued and the status of Official Plan Reviews has been introduced as an explanatory factor to e-governance tool development. While this research primarily expands on the hierarchical development theories by showing how municipal e-governance tools develop, it also identifies further research possibilities that could explain some of the development factors identified by this study in greater detail. Ultimately, although the results of this study are not conclusive, they do support a general trend in which municipalities develop and implement e-governance tools in a way that allow them to move from simple day-to-day service delivery applications to more complex tools that alter governance processes.

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Appendix A: Cases Studied by Population

This appendix shows the full list of cases included in this study listed in order of descending population.

Appendix A – List of Cases Included in Study		
	Municipality	**Population**
1.	Simcoe, County of	446,063
2.	Middlesex, County of	439,151
3.	Niagara, Regional Municipality of	431,346
4.	London, City of	366,151
5.	Markham, City of	301,709
6.	Vaughan, City of	288,301
7.	Kitchener, City of	219,153
8.	Windsor, City of	210,891
9.	Wellington, County of	208,360
10.	Richmond Hill, Town of	185,541
11.	Oakville, Town of	182,520
12.	Burlington, City of	175,779
13.	Greater Sudbury, City of	160,274
14.	Frontenac, County of	149,738
15.	Oshawa, City of	149,607
16.	Barrie, City of	135,711
17.	Hastings, County of	134,934
18.	Peterborough, County of	134,933
19.	St. Catharines, City of	131,400
20.	Cambridge, City of	126,748
21.	Lambton, County of	126,199
22.	Kingston, City of	123,363
23.	Whitby, Town of	122,022
24.	Guelph, City of	121,688
25.	Stormont, Dundas and Glengarry	111,164
26.	Ajax, Town of	109,600
27.	Thunder Bay, City of	108,359
28.	Oxford, County of	105,719
29.	Chatham-Kent, Municipality of	103,671
30.	Renfrew, County of	101,326
31.	Leeds and Grenville, United Counties of	99,306
32.	Waterloo, City of	98,780
33.	Brantford, City of	93,650
34.	Grey, County of	92,568
35.	Pickering, City of	88,721
36.	Elgin, County of	87,461
37.	Prescott and Russell, United Counties of	85,381

38.	Clarington, Municipality of	84,548
39.	Town of Milton	84,362
40.	Niagara Falls, City of	82,997
41.	Northumberland, County of	82,126
42.	Newmarket, Town of	79,978
43.	Peterborough, City of	78,698
44.	Sault Ste. Marie, City of	75,141
45.	Perth, County of	75,112
46.	Kawartha Lakes, City of	73,214
47.	Sarnia, City of	72,366
48.	Bruce, County of	66,102
49.	Lanark, County of	65,667
50.	Norfolk County	63,175
51.	Caledon, Town of	59,460
52.	Huron, County of	59,100
53.	Halton Hills, Town of	59,008
54.	Muskoka, District Municipality of	58,047
55.	Dufferin, County of	56,881
56.	North Bay, City of	53,651
57.	Aurora, Town of	53,203
58.	Welland, City of	50,631
59.	Belleville, City of	49,454
60.	Cornwall, City of	46,340
61.	Haldimand County	44,876
62.	Georgina, Town of	43,517
63.	City of Timmins	43,165
64.	Quinte West, City of	43,086
65.	Lennox and Addington, County of	41,824
66.	St. Thomas, City of	37,905
67.	Woodstock, City of	37,754
68.	Whitchurch-Stouffville, Town of	37,628
69.	Brant, County of	35,638
70.	Lakeshore, Town of	34,546
71.	Innisfil, Town of	33,079
72.	Stratford, City of	30,886
73.	Orillia, City of	30,586
74.	New Tecumseth, Town of	30,234
75.	Fort Erie, Town of	29,960
76.	LaSalle, Town of	28,643
77.	Leamington, Municipality of	28,403
78.	Bradford West Gwillimbury, Town of	28,077
79.	Orangeville, Town of	27,975
80.	Centre Wellington, Township of	26,693

81.	Grimsby, Town of	25,325
82.	Prince Edward, County of	25,258
83.	Tecumseh, Town of	23,610
84.	Clarence-Rockland, City of	23,185
85.	Woolwich, Township of	23,145
86.	Lincoln, Town of	22,487
87.	East Gwillimbury, Town of	22,473
88.	Brockville, City of	21,870
89.	Owen Sound, City of	21,688
90.	Scugog, Township of	21,569
91.	Amherstburg, Town of	21,556
92.	Strathroy-Caradoc, Township of	20,978
93.	Uxbridge, Township of	20,623
94.	Oro-Medonte, Township of	20,078
95.	King, Township of	19,899
96.	Essex, County of	19,600
97.	Collingwood, Town of	19,241
98.	Wilmot, Township of	19,223
99.	Huntsville, Town of	19,056
100.	Cobourg, Town of	18,519
101.	Essa, Township of	18,505
102.	Port Colborne, City of	18,424
103.	Springwater, Township of	18,223
104.	South Frontenac, Township of	18,113
105.	Thorold, City of	17,931
106.	Wasaga Beach, Town of	17,537
107.	Haliburton, County of	17,026
108.	Pelham, Town of	16,598
109.	Midland, Town of	16,572
110.	Middlesex Centre, Municipality of	16,487
111.	Loyalist, Township of	16,221
112.	Municipality of Port Hope	16,214
113.	Petawawa, Town of	15,988
114.	Greater Napanee, Town of	15,511
115.	Bracebridge, Town of	15,409
116.	Niagara-on-the-Lake, Town of	15,400
117.	Tillsonburg, Town of	15,301
118.	Russell, Township of	15,247
119.	North Grenville, Municipality of	15,085
120.	St. Clair, Township of	14,515
121.	Pembroke, City of	14,360
122.	West Nipissing, Municipality of	14,149
123.	West Lincoln, Township of	13,837

124.	Clearview, Township of	13,734
125.	Township of South Glengarry	13,162
126.	Thames Centre, Municipality of	13,000
127.	Central Elgin, Municipality of	12,743
128.	Saugeen Shores, Town of	12,661
129.	North Perth, Municipality of	12,631
130.	South Stormont, Township of	12,617
131.	Trent Hills, Municipality of	12,604
132.	Mississippi Mills, Town of	12,385
133.	Guelph/Eramosa, Township of	12,380
134.	Severn, Township of	12,377
135.	West Grey, Municipality of	12,286
136.	Ingersoll, Town of	12,146
137.	Perth East, Township of	12,028
138.	The Nation Municipality	11,668
139.	Gravenhurst, Town of	11,640
140.	Wellington North, Township of	11,477
141.	Elliot Lake, City of	11,348
142.	Brock, Township of	11,341
143.	Tiny, Township of	11,232
144.	North Dundas, Township of	11,225
145.	Kincardine, Municipality of	11,174
146.	Meaford, Municipality of	11,100
147.	Brighton, Municipality of	10,928
148.	South Dundas, Township of	10,794
149.	Erin, Town of	10,770
150.	Norwich, Township of	10,721
151.	Wellesley, Township of	10,713
152.	Hamilton, Township of	10,702
153.	Lambton Shores, Municipality of	10,656
154.	Adjala-Tosorontio, Township of	10,603
155.	Hawkesbury, Town of	10,551
156.	Georgian Bluffs, Township of	10,404
157.	Temiskaming Shores, City of	10,400
158.	North Glengarry, Township of	10,251
159.	Rideau Lakes, Township of	10,207

Appendix B: Full Survey Data

This appendix shows the full record of survey data for this study including sub-index and index scores as well as Official Plan review status. Table 4.2 showing the list of e-Governance Tools by Hierarchical Stage is reproduced below as a reference for the full data listing.

Table 4.2 – e-Governance Tools by Hierarchical Stage			
Information Dissemination	One-way service delivery	Two-way communication and Delivery	Citizen steered deliberation
N/A	1. Hard forms online but still filed in person 2. Hard forms online and can submit online 3. Digital forms and submission 4. Searchable database 5. All planning forms, documents, bylaws, and info accessible from Planning Department page	6. Personalised Alerts/RSS Feed 7. Online discussion board 8. Open feedback/request forms for info 9. Surveys 10. Link to social media	11. Open comment/request forms for process 12. Use of social media for process 13. Live chat 14. Online, binding voting (plebiscites) 15. Public meetings /w online access
Max Score: 0	Max Score: 5.0	Max Score: 5.0	Max Score: 5.0

Initial Sample

	One-Way Service						Two-Way Communication						Citizen-Steered Deliberation						SCORE
Municipality	**1**	**2**	**3**	**4**	**5**	**Sub**	**6**	**7**	**8**	**9**	**10**	**Sub**	**11**	**12**	**13**	**14**	**15**	**Sub**	**Total**
Town of Caledon	1	1	0	1	1	**4**	1	0	1	1	0	**3**	1	0	0	0	0	**1**	**8**
Town of Erin	1	0	0	1	1	**3**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**3**
County of Haliburton	1	0	0	0	1	**2**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**2**
Town of Lakeshore	1	0	0	0	0	**1**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**4**
Town of Mississippi Mills	1	0	0	0	0	**1**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**4**
Town of Orangeville	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
United Counties of Prescott and Russell	1	0	0	0	0	**1**	0	0	1	1	1	**3**	1	0	0	0	0	**1**	**5**
Township of South Stormont	1	0	0	0	1	**2**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**2**
Township of Tiny	1	0	0	0	0	**1**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**2**
City of Windsor	1	1	1	1	1	**5**	1	0	0	1	1	**3**	0	0	0	0	0	**0**	**8**

Full Sample

	One-Way Service						Two-Way Communication						Citizen-Steered Deliberation						SCORE
Municipality	**1**	**2**	**3**	**4**	**5**	**Sub**	**6**	**7**	**8**	**9**	**10**	**Sub**	**11**	**12**	**13**	**14**	**15**	**Sub**	**Total**
Adjala-Tosorontio, Township of	1	0	0	0	0	**1**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**1**
Ajax, Town of	1	0	0	0	1	**2**	1	0	1	0	1	**3**	1	0	0	0	0	**1**	**6**
Amherstburg, Town of	1	0	0	1	0	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
Aurora, Town of	1	0	0	1	1	**3**	0	0	1	1	1	**3**	0	0	0	0	1	**1**	**7**
Barrie, City of	1	0	0	1	0	**2**	1	0	1	1	1	**4**	0	0	0	0	0	**0**	**6**
Belleville, City of	1	0	0	0	0	**1**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**4**
Bracebridge, Town of	1	0	0	1	1	**3**	0	0	0	1	1	**2**	0	0	0	0	0	**0**	**5**
Bradford West Gwillimbury, Town of	1	0	0	0	1	**2**	1	0	1	0	1	**3**	1	0	0	0	0	**1**	**6**

	One-Way Service						Two-Way Communication						Citizen-Steered Deliberation						SCORE
Municipality	**1**	**2**	**3**	**4**	**5**	**Sub**	**6**	**7**	**8**	**9**	**10**	**Sub**	**11**	**12**	**13**	**14**	**15**	**Sub**	**Total**
Brant, County of	1	0	0	0	1	**2**	0	0	1	1	0	**2**	1	0	0	0	0	**1**	**5**
Brantford, City of	1	0	0	1	0	**2**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**5**
Brighton, Municipality of	1	0	0	1	1	**3**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**3**
Brock, Township of	1	0	0	0	1	**2**	1	0	0	0	0	**1**	0	0	0	0	0	**0**	**3**
Brockville, City of	1	0	0	1	1	**3**	0	0	1	0	1	**2**	0	0	0	0	0	**0**	**5**
Bruce, County of	1	0	0	1	1	**3**	1	0	1	0	0	**2**	0	0	0	0	0	**0**	**5**
Burlington, City of	1	0	1	1	1	**4**	1	1	1	0	1	**4**	1	1	0	0	0	**2**	**10**
Cambridge, City of	1	1	0	1	1	**4**	1	0	0	0	1	**2**	0	0	0	0	0	**0**	**6**
Central Elgin, Municipality of	0	0	1	1	1	**3**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**6**
Centre Wellington, Township of	1	0	0	0	1	**2**	0	0	1	0	0	**1**	0	0	0	0	0	**0**	**3**
Chatham-Kent, Municipality of	1	0	0	1	1	**3**	1	0	0	1	1	**3**	0	0	0	0	0	**0**	**6**
Clarence-Rockland, City of	1	0	0	0	1	**2**	0	0	0	1	0	**1**	0	0	0	0	0	**0**	**3**
Clarington, Municipality of	1	0	0	1	1	**3**	1	0	1	0	1	**3**	1	0	0	0	0	**1**	**7**
Clearview, Township of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
Cobourg, Town of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
Collingwood, Town of	1	1	0	0	1	**3**	1	0	1	0	1	**3**	1	0	0	0	0	**1**	**7**
Cornwall, City of	1	0	0	0	1	**2**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**5**
Dufferin, County of	1	0	0	0	0	**1**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**2**
Durham, Regional Municipality of	1	0	0	0	1	**2**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**5**
East Gwillimbury, Town of	1	0	0	1	1	**3**	1	0	1	0	0	**2**	0	0	0	0	0	**0**	**5**
Elgin, County of	1	0	0	0	0	**1**	0	0	1	0	1	**2**	0	0	0	0	0	**0**	**3**
Elliot Lake, City of	1	0	0	0	1	**2**	1	0	1	0	0	**2**	0	0	0	0	0	**0**	**4**
Essa, Township of	1	0	0	1	1	**3**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**3**
Essex, County of	1	0	0	1	1	**3**	0	0	1	0	0	**1**	0	0	0	0	0	**0**	**4**

	One-Way Service						Two-Way Communication						Citizen-Steered Deliberation						SCORE
Municipality	**1**	**2**	**3**	**4**	**5**	**Sub**	**6**	**7**	**8**	**9**	**10**	**Sub**	**11**	**12**	**13**	**14**	**15**	**Sub**	**Total**
Essex, Town of	**Eliminated from study: Temporary website with limited access due to site upgrades**																		
Fort Erie, Town of	1	0	0	1	1	**3**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**6**
Frontenac, County of	1	0	0	0	1	**2**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**5**
Georgian Bluffs, Township of	1	0	0	0	1	**2**	1	0	0	0	0	**1**	0	0	0	0	0	**0**	**3**
Georgina, Town of	1	0	0	1	1	**3**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**4**
Gravenhurst, Town of	1	0	0	0	1	**2**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**2**
Greater Napanee, Town of	1	0	0	1	1	**3**	1	0	0	0	1	**2**	0	0	0	0	0	**0**	**5**
Greater Sudbury, City of	1	0	0	1	1	**3**	1	0	1	1	1	**4**	0	0	0	0	1	**1**	**8**
Grey, County of	1	1	0	0	1	**3**	1	0	0	0	1	**2**	0	0	0	0	0	**0**	**5**
Grimsby, Town of	1	0	0	0	1	**2**	0	0	1	0	0	**1**	0	0	0	0	0	**0**	**3**
Guelph, City of	1	0	1	1	1	**4**	1	0	1	0	1	**3**	0	1	0	0	0	**1**	**8**
Guelph/Eramosa, Township of	1	0	0	0	1	**2**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**2**
Haldimand County	1	0	0	1	1	**3**	0	0	0	1	0	**1**	0	0	0	0	0	**0**	**4**
Halton Hills, Town of	1	0	1	1	1	**4**	1	0	1	0	1	**3**	1	1	0	0	0	**2**	**9**
Hamilton, Township of	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**0**
Hastings, County of	1	0	0	1	1	**3**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**6**
Hawkesbury, Town of	1	0	0	0	1	**2**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**2**
Huntsville, Town of	1	1	0	0	1	**3**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**6**
Huron, County of	1	0	0	0	1	**2**	0	0	1	0	0	**1**	0	0	0	0	0	**0**	**3**
Ingersoll, Town of	1	0	0	0	0	**1**	0	0	1	0	0	**1**	0	0	0	0	0	**0**	**2**
Innisfil, Town of	1	0	1	0	1	**3**	0	0	1	0	0	**1**	0	0	0	0	0	**0**	**4**

	One-Way Service						Two-Way Communication						Citizen-Steered Deliberation						SCORE
Municipality	**1**	**2**	**3**	**4**	**5**	**Sub**	**6**	**7**	**8**	**9**	**10**	**Sub**	**11**	**12**	**13**	**14**	**15**	**Sub**	**Total**
Kawartha Lakes, City of	1	0	0	0	1	**2**	0	0	1	0	1	**2**	0	0	0	0	0	**0**	**4**
Kincardine, Municipality of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
King, Township of	1	0	0	1	1	**3**	0	0	1	0	1	**2**	0	0	0	0	0	**0**	**5**
Kingston, City of	1	0	0	1	1	**3**	0	0	1	1	1	**3**	0	0	0	0	0	**0**	**6**
Kingsville, Town of	**Eliminated from study: Temporary website with limited access due to site upgrades**																		
Kitchener, City of	1	0	0	0	1	**2**	1	0	1	1	1	**4**	1	0	0	0	0	**1**	**7**
Town of LaSalle	1	0	0	1	1	**3**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**3**
Lambton, County of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
Lambton Shores, Municipality of	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**0**
Lanark, County of	1	0	0	0	1	**2**	0	0	1	0	1	**2**	0	0	0	0	0	**0**	**4**
Leamington, Municipality of	1	0	0	0	1	**2**	1	1	1	1	0	**4**	1	0	0	0	0	**1**	**7**
Leeds and Grenville, United Counties of	1	0	0	0	1	**2**	1	0	1	0	0	**2**	0	0	0	0	0	**0**	**4**
Lennox and Addington, County of	0	0	0	0	0	**0**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**3**
Lincoln, Town of	1	1	0	1	1	**4**	0	0	0	1	1	**2**	0	0	0	0	0	**0**	**6**
London, City of	1	0	0	1	1	**3**	1	1	1	1	1	**5**	1	1	0	0	0	**2**	**10**
Loyalist, Township of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
Markham, City of	1	0	1	1	1	**4**	1	0	1	1	1	**4**	1	0	0	0	0	**1**	**9**
Meaford, Municipality of	1	0	0	0	1	**2**	0	0	1	1	1	**3**	1	0	0	0	0	**1**	**6**
Middlesex, County of	1	0	0	1	1	**3**	1	0	1	0	1	**3**	1	0	0	0	0	**1**	**7**
Middlesex Centre, Municipality of	1	1	0	1	1	**4**	1	0	0	0	1	**2**	1	0	0	0	0	**1**	**7**
Midland, Town of	1	0	0	1	1	**3**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**3**
Town of Milton	1	0	0	1	0	**2**	0	0	1	0	1	**2**	0	0	0	0	0	**0**	**4**

	One-Way Service						Two-Way Communication						Citizen-Steered Deliberation						SCORE
Municipality	**1**	**2**	**3**	**4**	**5**	**Sub**	**6**	**7**	**8**	**9**	**10**	**Sub**	**11**	**12**	**13**	**14**	**15**	**Sub**	**Total**
Muskoka, District Municipality of	1	0	0	1	0	**2**	0	0	0	0	0	**0**	1	0	0	0	0	**1**	**3**
New Tecumseth, Town of	1	1	0	0	1	**3**	0	0	1	0	0	**1**	0	0	0	0	0	**0**	**4**
Newmarket, Town of	1	1	0	1	1	**4**	1	0	0	1	1	**3**	1	0	0	0	0	**1**	**8**
Niagara, Regional Municipality of	1	0	0	1	1	**3**	1	0	1	1	1	**4**	0	0	0	0	0	**0**	**7**
Niagara Falls, City of	1	0	0	1	1	**3**	0	0	1	1	1	**3**	1	0	0	0	0	**1**	**7**
Niagara-on-the-Lake, Town of	1	0	0	0	1	**2**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**5**
Norfolk County	1	0	0	1	1	**3**	1	0	1	0	1	**3**	0	0	0	0	1	**1**	**7**
North Bay, City of	1	0	0	1	1	**3**	1	0	0	0	1	**2**	1	0	0	0	0	**1**	**6**
North Dundas, Township of	1	0	0	0	1	**2**	0	0	1	0	1	**2**	0	0	0	0	0	**0**	**4**
North Glengarry, Township of	1	0	0	1	0	**2**	1	0	1	0	0	**2**	0	0	0	0	0	**0**	**4**
North Grenville, Municipality of	1	0	0	0	1	**2**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**2**
North Perth, Municipality of	1	0	0	0	1	**2**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**5**
Northumberland, County of	1	0	0	0	0	**1**	1	0	0	0	0	**1**	0	0	0	0	0	**0**	**2**
Norwich, Township of	1	0	0	0	1	**2**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**2**
Oakville, Town of	1	0	0	0	1	**2**	1	0	1	0	1	**3**	1	0	0	0	1	**2**	**7**
Orillia, City of	1	0	0	1	1	**3**	1	0	1	0	1	**3**	1	0	0	0	0	**1**	**7**
Oro-Medonte, Township of	1	0	0	0	1	**2**	0	0	1	0	1	**2**	0	0	0	0	0	**0**	**4**
Oshawa, City of	1	0	0	0	1	**2**	1	0	0	0	1	**2**	0	0	0	0	0	**0**	**4**
Owen Sound, City of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
Oxford, County of	1	1	1	1	1	**5**	0	0	1	0	1	**2**	0	0	0	0	0	**0**	**7**
Pelham, Town of	1	0	0	0	1	**2**	0	0	1	0	0	**1**	0	0	0	0	0	**0**	**3**
Pembroke, City of	1	0	0	0	1	**2**	1	0	0	0	1	**2**	0	0	0	0	0	**0**	**4**

	One-Way Service						Two-Way Communication						Citizen-Steered Deliberation						SCORE
Municipality	**1**	**2**	**3**	**4**	**5**	**Sub**	**6**	**7**	**8**	**9**	**10**	**Sub**	**11**	**12**	**13**	**14**	**15**	**Sub**	**Total**
Perth, County of	1	0	0	1	0	**2**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**5**
Perth East, Township of	1	0	0	1	1	**3**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**6**
Petawawa, Town of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
Peterborough, County of	1	0	0	0	1	**2**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**2**
Peterborough, City of	1	0	0	1	1	**3**	1	0	1	1	0	**3**	1	0	0	0	0	**1**	**7**
Pickering, City of	1	0	0	1	1	**3**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**6**
Port Colborne, City of	1	0	0	1	1	**3**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**6**
Municipality of Port Hope	0	0	0	0	0	**0**	1	0	0	0	1	**2**	0	0	0	0	0	**0**	**2**
Prince Edward, County of	1	0	0	1	1	**3**	0	0	0	1	0	**1**	0	0	0	0	0	**0**	**4**
Quinte West, City of	1	0	1	1	1	**4**	1	0	1	0	1	**3**	1	0	0	0	0	**1**	**8**
Renfrew, County of	1	0	0	1	1	**3**	0	0	0	1	1	**2**	0	0	0	0	0	**0**	**5**
Richmond Hill, Town of	1	0	0	1	1	**3**	1	0	0	0	1	**2**	0	0	0	0	0	**0**	**5**
Rideau Lakes, Township of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
Russell, Township of	1	0	0	1	1	**3**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**3**
Sarnia, City of	1	1	0	0	1	**3**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**4**
Saugeen Shores, Town of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
Sault Ste. Marie, City of	1	0	0	0	1	**2**	0	0	0	1	1	**2**	0	0	0	0	0	**0**	**4**
Scugog, Township of	1	0	0	0	1	**2**	1	0	1	0	0	**2**	0	0	0	0	0	**0**	**4**
Severn, Township of	1	0	0	1	1	**3**	0	0	1	0	0	**1**	0	0	0	0	0	**0**	**4**
Simcoe, County of	1	0	0	0	1	**2**	1	0	0	1	1	**3**	0	0	0	0	0	**0**	**5**
South Dundas, Township of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
South Frontenac, Township of	1	0	0	0	1	**2**	0	0	1	0	0	**1**	0	0	0	0	0	**0**	**3**
Township of South Glengarry	1	0	0	0	0	**1**	1	0	1	0	1	**3**	1	0	0	0	0	**1**	**5**
Springwater, Township of	1	0	0	0	1	**2**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**5**

	One-Way Service						Two-Way Communication						Citizen-Steered Deliberation						SCORE
Municipality	**1**	**2**	**3**	**4**	**5**	**Sub**	**6**	**7**	**8**	**9**	**10**	**Sub**	**11**	**12**	**13**	**14**	**15**	**Sub**	**Total**
St. Catharines, City of	1	0	0	1	0	**2**	1	0	1	1	1	**4**	0	1	0	0	0	**1**	**7**
St. Clair, Township of	0	0	0	0	0	**0**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**0**
St. Thomas, City of	1	0	0	0	1	**2**	1	0	0	0	0	**1**	0	0	0	0	0	**0**	**3**
Stormont, Dundas and Glengarry	1	0	0	0	1	**2**	0	0	1	0	0	**1**	0	0	0	0	0	**0**	**3**
Stratford, City of	1	0	0	1	0	**2**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**5**
Strathroy-Caradoc, Township of	1	0	0	0	1	**2**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**5**
Tecumseh, Town of	1	0	0	1	1	**3**	0	0	1	1	1	**3**	1	0	0	0	0	**1**	**7**
Temiskaming Shores, City of	1	0	0	0	1	**2**	1	0	1	0	0	**2**	1	0	0	0	0	**1**	**5**
Thames Centre, Municipality of	1	1	0	0	1	**3**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**4**
The Nation Municipality	1	0	0	0	1	**2**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**2**
Thorold, City of	1	0	0	1	1	**3**	0	0	0	1	0	**1**	0	0	0	0	0	**0**	**4**
Thunder Bay, City of	1	1	0	1	1	**4**	1	0	1	1	1	**4**	1	0	0	0	0	**1**	**9**
Tillsonburg, Town of	1	0	0	1	1	**3**	0	0	1	1	1	**3**	0	0	0	0	0	**0**	**6**
City of Timmins	1	0	0	1	1	**3**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**6**
Trent Hills, Municipality of	1	0	0	1	1	**3**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**3**
Uxbridge, Township of	1	0	0	0	1	**2**	1	0	0	0	1	**2**	0	0	0	0	0	**0**	**4**
Vaughan, City of	1	0	0	1	1	**3**	1	0	1	1	1	**4**	0	0	0	0	0	**0**	**7**
Wasaga Beach, Town of	1	0	0	0	1	**2**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**2**
Waterloo, City of	1	1	1	1	1	**5**	1	0	0	1	1	**3**	0	0	0	0	0	**0**	**8**
Welland, City of	1	0	0	0	1	**2**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**5**
Wellesley, Township of	1	1	0	1	1	**4**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**4**
Wellington, County of	1	0	0	1	1	**3**	1	0	1	0	1	**3**	1	0	0	0	0	**1**	**7**
Wellington North, Township of	1	0	0	1	1	**3**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**3**
West Grey, Municipality of	1	0	0	1	1	**3**	1	0	0	0	1	**2**	0	0	0	0	0	**0**	**5**

	One-Way Service						Two-Way Communication						Citizen-Steered Deliberation						SCORE
Municipality	**1**	**2**	**3**	**4**	**5**	**Sub**	**6**	**7**	**8**	**9**	**10**	**Sub**	**11**	**12**	**13**	**14**	**15**	**Sub**	**Total**
West Lincoln, Township of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
West Nipissing, Municipality of	1	0	0	0	1	**2**	0	0	0	0	0	**0**	0	0	0	0	0	**0**	**2**
Whitby, Town of	1	0	0	1	1	**3**	1	0	1	0	1	**3**	1	0	0	0	0	**1**	**7**
Whitchurch-Stouffville, Town of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
Wilmot, Township of	1	0	0	0	1	**2**	0	0	0	0	1	**1**	0	0	0	0	0	**0**	**3**
Woodstock, City of	1	1	1	0	1	**4**	1	0	0	0	1	**2**	0	0	0	0	0	**0**	**6**
Woolwich, Township of	1	0	0	0	1	**2**	1	0	1	0	1	**3**	0	0	0	0	0	**0**	**5**